

**ENTERED**

July 01, 2021

Nathan Ochsner, Clerk

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF TEXAS  
HOUSTON DIVISION

GRACE INSTRUMENT INDUSTRIES, LLC,	§	
	§	
Plaintiff,	§	
VS.	§	CIVIL ACTION NO. 4:20-CV-1749
	§	
CHANDLER INSTRUMENTS COMPANY,	§	
LLC, <i>et al</i> ,	§	
	§	
Defendants.	§	

**Memorandum and Order on Claim Construction**

This patent case is before the Court for construction of disputed claim terms in the United States Patent No. 7,412,877 (the “‘877 Patent”), which Plaintiff Grace Instrument Industries, LLC (“Grace” or the “Plaintiff”) owns. Grace has accused Defendants Chandler Instruments Company, LLC’s (“Chandler”) and Ametek, Inc. (“Ametek”) (collectively, the “Defendants”) of infringing the ‘877 Patent.

The Court conducted a hearing pursuant to *Markman v. Westview Instruments, Inc.*, 517 U.S. 370 (1996) (“*Markman* hearing”), during which the parties presented evidence and argument regarding the proper construction of disputed claim terms. Based on the evidence before the Court, the arguments presented by counsel, and the governing legal authorities, the Court issues this Memorandum and Order construing twelve terms or phrases contained in the ‘877 Patent.

**I. Background**

According to Grace’s complaint, it is the patentholder of the ‘877 Patent, which is a viscometer—a device used by oil and gas drillers to test the viscosity of drilling fluid in a lab setting before it is used downhole.<sup>1</sup> Grace filed its patent application on October 24, 2005.

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<sup>1</sup> The inventor of the ‘877 Patent is Hongfeng “Frank” Bi, who is the owner of Grace and who assigned all of his rights, title, and interest in the ‘877 Patent to Grace prior to this lawsuit.

Chandler markets and sell a viscometer with the tradename Model 7600 Rheometer (the “Model 7600”), which allegedly infringes the ‘877 Patent. Chandler has sold the Model 7600 for at least 15 years, but Grace claims that a 2016 revision of the product, “Revision N” added an “enlarged chamber” which has caused the Model 7600 to now infringe upon the ‘877 Patent. Among other defenses, Chandler has raised the affirmative defense of patent invalidity claiming that the ‘877 Patent is invalid—and should not have been issued in the first place—because Chandler had already created and sold the Model 7600 to Baker Hughes, an energy technology company, more than one year before Grace applied for the ‘877 Patent.

## **II. Claim Construction Legal Standard**

“It is a bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Aventis Pharm., Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013) (quoting *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc)). The patent claims in issue must be construed as a matter of law to determine their scope and meaning. *See, e.g., Markman*, 517 U.S. at 390; *Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1317 (Fed. Cir. 2007).

“There is a heavy presumption that claim terms are to be given their ordinary and customary meaning.” *Aventis*, 715 F.3d at 1373 (first citing *Phillips*, 415 F.3d at 1312-13; and then citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Therefore, courts must “look to the words of the claims themselves . . . to define the scope of the patented invention.” *Id.* (citations omitted); *see also Summit 6, LLC v. Samsung Elec. Co., Ltd.*, 802 F.3d 1283, 1290 (Fed. Cir. 2015). The “ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Phillips*, 415 F.3d at 1313;

see also *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1374 (Fed. Cir. 2009). This “person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Phillips*, 415 F.3d at 1313; *ICU*, 558 F.3d at 1374.

Intrinsic evidence is the primary resource for claim construction. See *Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (citing *Phillips*, 415 F.3d at 1312). For certain claim terms, “the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words.” *Phillips*, 415 F.3d at 1314. For other claim terms, however, the meaning of the claim language may be less apparent. To construe those terms, the Court considers “those sources available to the public that show what a person of skill in the art would have understood disputed claim language to mean . . . [including] the words of the claims themselves, the remainder of the specification, the prosecution history, and extrinsic evidence concerning relevant scientific principles, the meaning of technical terms, and the state of the art.” *Id.*

The claims “provide substantial guidance as to the meaning of particular claim terms.” *Id.* The Court may consider the context in which the terms are used and the differences among the claims. See *id.* “Because claim terms are normally used consistently throughout the patent, the usage of a term in one claim can often illuminate the meaning of the same term in other claims.” *Id.* Because the claims “are part of a fully integrated written instrument,” the Court may also consider the specification and the patent’s prosecution history. *Id.* at 1315, 1317.

### III. Construction of Disputed Terms

This Court has carefully reviewed the '877 Patent. It has also considered each counsel's arguments presented in the claim construction briefing and at the Markman hearing. The Court has also reviewed and hereby applies the governing Federal Circuit authority. On this basis, the Court construes the following '877 Patent claim terms "whereby said pressurization fluid would not mix with said test sample because of the nature of their density difference" (and related terms), "top section filled with a pressurization fluid of a first density and at least one lower section filled with a test sample of a second density," "top section filled with a pressurization fluid of a first density," "while contacting with a sample liquid of a second density to be measured," "enlarged chamber," "fluid," "communicating pressure," "means for driving said rotor to rotate located in at least one bottom section," "bearing means for rotationally suspending said bob," "spring means restricting the rotation of said bob," "means for directly or indirectly sensing the rotation of said bob," and "means for driving said rotor to rotate is a magnetic coupling across said pressure vessel wall."

A. **"Whereby said pressurization fluid would not mix with said test sample because of the nature of their density difference" (and related terms); "top section filled with a pressurization fluid of a first density and at least one lower section filled with a test sample of a second density"; "top section filled with a pressurization fluid of a first density"; and "while contacting with a sample liquid of a second density to be measured"**

Claims 1 and/or 4 of the '877 Patent use the above phrases, and the parties agree that they should all be considered together. Chandler argues that all of these phrases need construction, and that they should be construed as indefinite. Grace argues that the phrases should all be given their plain and ordinary meaning (i.e., that no construction is necessary). Claim 1 of the '877 Patent states in full:

1. A pressurized device comprising:

- (a) a pressure vessel within which is vertically disposed at least one *top section filled with a pressurization fluid of a first density and at least one lower section filled with a test sample of a second density*,
- (b) an enlarged chamber with reduced openings positioned between the at least one top section and the at least one bottom section for communicating pressure with said top section and said lower section within said pressure vessel,
- (c) *whereby said pressurization fluid would not mix with said test sample because of the nature of their density difference.*

‘877 Patent col. 12 ll. 34–46 (emphasis added). Claim 4 of the ‘877 Patent states in full:

- 4. Viscometer comprising:
  - (a) a pressure vessel within which *at least one top section filled with a pressurization fluid of a first density*,
  - (b) within said pressure vessel a rotor which is driven to rotate *while contacting with a sample liquid of a second density to be measured*,
  - (c) means for driving said rotor to rotate located in at least one bottom section,
  - (d) a bob within said rotor,
  - (e) an enlarged chamber with reduced openings positioned between the at least one bottom section for communicating pressure located above said bob,
  - (f) whereby said pressurization fluid would not mix with said sample because of the nature of their density difference.

‘877 Patent col. 12 ll. 51–67 (emphasis added).

Pursuant to 35 U.S.C. § 112(b), a patent specification shall “conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.” The Supreme Court has held this definiteness provision “to require that a patent’s claims, viewed in light of the specification and prosecution history, inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). Claims are presumed to be definite, *S3 Inc. v. NVIDIA Corp.*, 259 F.3d 1364, 1367 (Fed. Cir. 2001), but “a single claim covering both an

apparatus and a method of use of that apparatus is indefinite.” *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1313 (Fed. Cir. 2017) (citing *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377 (Fed. Cir. 2005)). “[A]pparatus claims are not necessarily indefinite for using functional language,” but will be held indefinite “when claiming both an apparatus and method of using the apparatus within a single claim” because doing so makes it “unclear whether infringement occurs when one creates an infringing system, or whether infringement occurs when the user actually uses the system in an infringing manner.” *Id.* (cleaned up).

In *MasterMine*, the Federal Circuit detailed various cases in which it held claim language impermissibly covered both an apparatus and a method of use, and cases in which it held the opposite. 874 F.3d at 1313–15. For example, in *IPXL Holdings*, the court held a claim stating the following was indefinite:

The *system of claim 2* [including an input means] wherein the predicted transaction information comprises both a transaction type and transaction parameters associated with that transaction type, and *the user uses the input means* to either change the predicted transaction information or accept the displayed transaction type and transaction parameters.

430 F.3d at 1384. This claim was found to be indefinite because a person of ordinary skill in the art could not be certain whether infringement occurred “when one creates a system that allows the user to change the predicted transaction information or accept the displayed transaction, or whether infringement occurs when the user actually uses the input means to change transaction information or uses the input means to accept a displayed transaction.” *Id.* Similarly, a claim covering a “system with an ‘interface means for providing automated voice messages . . . to certain of said individual callers, wherein said certain of said individual callers digitally enter data’” was held to be indefinite in *In re Katz Interactive Call Processing Patent Litig.* because its language claimed both an

apparatus and a method of use. 639 F.3d 1303, 1318 (Fed. Cir. 2011). In addition, the Federal Circuit held a claim invalid for indefiniteness where “[t]he first four elements of [the claim] recite[d] apparatus elements: buffer means, fractional encoding means, second buffer means, and trellis encoding means,” but “[t]he final element [was] a method: ‘transmitting the trellis encoded frames.’” *Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1339 (Fed. Cir. 2011).

On the other hand, the Federal Circuit has held that functional language will not make an apparatus claim invalid for indefiniteness when the claim was for a mobile station for use with a network and the claim “merely establish[es] those functions as the underlying network environment in which the mobile station operates.” *HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1277 (Fed. Cir. 2012). Similarly, the claim at issue in *UltimatePointer, L.L.C. v. Nintendo Co., Ltd.* claimed “‘a handheld device including: an image sensor, said image sensor generating data’ and other similar ‘generating data’ limitations.” 816 F.3d 816, 826 (Fed. Cir. 2016). The court held that this language was not indefinite because “the ‘generating data’ limitation reflects the capability of that structure rather than the activities of the user,” and “do not reflect an attempt to claim both an apparatus and a method, but instead claim an apparatus with particular capabilities.” *Id.* at 827–28. In *MasterMine*, the court ultimately decided that the claims at issue there were similarly permissible. 874 F.3d at 1315–16. There, though the claim “include[d] active verbs—presents, receives, and generates,” they did not attempt to claim activities performed by the user, but instead “represent[ed] permissible functional language used to describe capabilities of the” system. *Id.* at 1315.

The language at issue in the ‘877 patent is more similar to the various claims at issue in the latter group of cases. Claims 1 and 4 certainly acknowledge that a user will be involved with the operation of the viscometer, but merely mentioning the functional aspects of the apparatus does

not necessarily make the claims indefinite. *See MasterMine*, 874 F.3d at 1313. The verbs in Claims 1 and 4 instead “represent permissible functional language used to describe capabilities of” the viscometer. *Id.* at 1315. The language is an explanation that the viscometer will not function as designed unless the user uses fluids of two different densities. Like the language in *MasterMine*, which “claim[ed] the system’s capability to receive and respond to user selection,” *id.* at 1316, the claims here claim the viscometer’s capability to function when fluids of two different densities are selected. They do not “focus on specific actions performed by the user.” *Id.*

Further, the underlying rationale against one claiming both an apparatus and a method of using the apparatus within a single claim is not implicated here. In *IPXL Holdings*, the Federal Circuit explained that the concern arises when the claim makes it “unclear whether infringement . . . occurs when one creates a[n infringing] system, or whether infringement occurs when the user actually uses [the system in an infringing manner].” *UltimatePointer*, 816 F.3d at 826 (alteration in original) (quoting *IPXL Holdings*, 430 F.3d at 1384). Here, there is no such confusion. No person of ordinary skill in the art could reasonably believe that the ‘877 Patent attempts to claim the method of using two fluids with different densities because all viscometers require the use of fluids with two different densities, and a person of ordinary skill in the art would know that. The ‘877 Patent even identifies the Fann Instrument Company’s Model 75 Viscometer as prior art, *see* ‘877 Patent, col. 1 ll. 55–60, which, according to extrinsic evidence provided, also requires the use of fluids of two different densities. (*See* Doc. No. 52, Ex. 3 at 19). Just as in *MasterMine*, “[b]ecause the claims merely use permissible functional language to describe the capabilities of the claimed system, it is clear that infringement occurs when one makes, uses, offers to sell, or sells the claimed system.” 874 F.3d at 1316. Accordingly, the Court adopts the Plaintiff’s proposed

construction (or, rather, non-construction), and gives the first four disputed terms their plain and ordinary meaning.

**B. “Enlarged chamber”**

The term “enlarged chamber” is used in Claims 1, 4, and 17 of the ‘877 Patent. Claims 1 and 4 have been previously recited. Claim 17 is dependent on Claim 4 and states:

The viscometer of claim 4 wherein said enlarged chamber formed by at least two washer shaped fins disposed parallelly along the axial direction that said bob rotates.

‘877 Patent, col. 14 ll. 7–9. Chandler argues that this term is also indefinite because it is a term of degree and the ‘877 Patent provides no baseline against which the term can be compared. Alternatively, Chandler argues it should be construed as “chamber with an enlarged diameter or length relative to the chambers/sections it is between.” Grace argues that the term should be construed as “the area between reduced openings that is large enough to hold excess test sample (i.e., the type of fluid normally tested in these machines) to prevent mixing of pressurization fluid and test sample below the bottom fin during elevated pressurization.”

A term of degree is one that “necessarily calls for a comparison against some baseline.” *Liberty Ammunition, Inc. v. United States*, 835 F.3d 1388, 1395 (Fed. Cir. 2016). Some claim language being imprecise does not automatically render the claim invalid. *Seattle Box Co., Inc. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984). Nevertheless, “claims having terms of degree will fail for indefiniteness unless they ‘provide objective boundaries for those of skill in the art’ when read in light of the specification and the prosecution history.” *Liberty Ammunition*, 835 F.3d at 1395 (quoting *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014)).

First, there is no doubt that “enlarged” is a term of degree. Merriam-Webster defines “enlarge” as “to make larger.” *Enlarge*, Merriam-Webster’s Dictionary, <https://www.merriam-webster.com/dictionary/enlarge> (last visited June 30, 2021). The definition of “enlarge” in the Cambridge Dictionary is “to become bigger or to make something bigger.” *Enlarge*, Cambridge Dictionary, <https://dictionary.cambridge.org/us/dictionary/english/enlarge> (last visited June 30, 2021). These definitions raise the question: larger (or bigger) than what? Accordingly, “enlarged” “necessarily calls for some comparison against some baseline” and is therefore a term of degree. *Liberty*, 835 F.3d at 1395. “Enlarged chamber” must provide objective boundaries for those of skill in the art or fail for indefiniteness. *Id.*

Grace argues that “enlarged chamber” is not indefinite and that Grace’s proposed construction allows the “enlarged chamber” to serve the “fundamental purpose of the ‘877 Patent: to prevent mixing of the pressurization fluid and test sample in the lower section.” (Doc. No. 52 at 14). According to Grace, the entire context of the ‘877 Patent demonstrates to a person of ordinary skill in the art that the “enlarged chamber” is the area between the top fin and the bottom fin, and must be big enough to hold enough fluid to fill the compression void. Even assuming these arguments are true, explaining that something is *large enough* to do a certain task does not answer the question: *larger than what?* There is still no baseline from which to answer that question.

Further, Grace argued at oral argument that the “baseline” against which “enlarged” should be judged is the prior art. While it may have been the actual intent of the patentee to have “enlarged” be in relation to the prior art, this is not evident from the ‘877 Patent itself. Nothing in the ‘877 Patent provides such a baseline. Indeed, the only evidence Grace provided for this contention was deposition testimony from the patentee. The Court has reviewed this deposition testimony. None of it is specific or explicit enough to demonstrate that a person of ordinary skill

in the art could read the ‘877 Patent and be notified that “enlarged chamber” is in reference to the prior art. The ‘877 Patent does not provide the requisite objective boundaries. Accordingly, the Court holds that “enlarged chamber” is indefinite.

### C. “Fluid”

Next, the parties dispute how to define the term “fluid,” which is used in Claims 1 and 4 of the ‘877 Patent. Chandler argues that “fluid” should be construed to mean “a gas or a liquid,” but Grace contends in its briefing that it can be given its plain and ordinary meaning (that no construction is necessary). Claim 4 recites both “a pressurization *fluid* of a first density” and “a sample *liquid* of a second density.” ‘877 Patent col. 12 ll. 54–56 (emphases added). When a claim uses two different terms, it is presumed that the terms have different meanings. *SimpleAir, Inc. v. Sony Ericsson Mobile Commc’ns AB*, 820 F.3d 419, 431 (Fed. Cir. 2016). Therefore, it is presumed here that “fluid” cannot mean only “liquid” and must encompass something else as well.

Moreover, Grace’s argument that “fluid” should be given its plain and ordinary meaning leads to the same result. The definition of the noun “fluid” in Merriam-Webster’s dictionary is “a substance (*such as a liquid or gas*) tending to flow or conform to the outline of its container.” *Fluid*, Merriam-Webster’s Dictionary, <https://www.merriam-webster.com/dictionary/fluid> (last visited June 30, 2021) (emphasis added). The definition of the noun “fluid” in the Cambridge Dictionary is “a substance that flows and is not solid.” *Fluid*, Cambridge Dictionary, <https://dictionary.cambridge.org/us/dictionary/english/fluid> (last visited June 30, 2021). Both liquids and gasses are not solid. Last, Dictionary.com defines the noun “fluid” as “a substance, *as a liquid or gas*, that is capable of flowing and that changes its shape at a steady rate when acted upon by a force tending to change its shape.” *Fluid*, Dictionary.com, <https://www.dictionary.com/browse/fluid> (last visited June 30, 2021) (emphasis added). All of

these definitions indicate that the plain and ordinary meaning of “fluid” includes both liquid and gas.

At oral argument, contrary to its briefing that argued for the plain and ordinary meaning, Grace argued that the ‘877 Patent evinces the intent that the patentee act as his own lexicographer for the term “fluid.” *See Thorner v. Sony Computer Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (“To act as its own lexicographer, a patentee must clearly set forth a definition of the disputed claim term other than its plain and ordinary meaning.”) (internal quotations omitted). In support of this contention, Grace pointed to a sentence in the patent’s preferred embodiment that states: “Because pressurization fluid is generally a clean, nonabrasive liquid, this ensures bob shaft bearing 18 and bob shaft bearing 22 rotate freely and have long working life span.” ‘877 Patent col. 6 ll. 19–22. Certainly, this sentence describes the fluid as most of the time being a liquid, but this argument is faulty for two reasons.

First, to be his own lexicographer, the patentee must *clearly* set forth the claim term’s definition. *See Thorner*, 669 F.3d at 1365. The language quoted does not clearly define the term “fluid,” but instead provides only that pressurization fluid is *generally* a clean, nonabrasive liquid. This could imply that there are some pressurization fluids that are liquids that are not clean and not nonabrasive, or it could imply that there are some pressurization fluids that are not liquids at all. This latter view would support Chandler’s construction of the term. Either way, the language does not meet the “exacting standard” for the patentee to act as his own lexicographer. *Id.*

Next, the above-quoted language appears only once in the ‘877 Patent, and it is within the patent’s preferred embodiment. When assigning a special intra-patent meaning to a term, “[i]t is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must ‘clearly express an intent’ to redefine the term.” *Id.* (quoting

*Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1381 (Fed. Cir. 2008)). Even if the quoted language were clearer, it is only recited once, and only in the preferred embodiment. The fact that the preferred embodiment’s “fluid” is a liquid, does not necessarily mean that “fluid” only means liquid throughout the ’877 Patent. For these reasons, the Court adopts Chandler’s proposed construction of “fluid” as “a gas or a liquid.”

**D. “Communicating pressure”**

The parties next dispute how to define the term “communicating pressure,” which is used in Claims 1 and 4 of the ’877 Patent. Chandler argues that “communicating pressure” should be construed to mean “transmitting pressure,” but Grace contends that it can be given its plain and ordinary meaning (that no construction is necessary). The Court agrees with Grace that no construction of this term is necessary. Its meaning would be clear to the person of ordinary skill in the art without construction. Moreover, the dictionary definition of “communicate” includes the term “transmit,” so Chandler’s proposed construction is redundant and unnecessary. The Court declines to further construe the term “communicating pressure.”

**E. “Means for driving said rotor to rotate located in at least one bottom section”**

Under 35 U.S.C. §112, ¶ 6 (pre-AIA),<sup>2</sup> a claim is a means-plus-function limitation if it “recites a function to be performed rather than definite structure or materials for performing that function.” *Lockheed Martin Corp. v. Space Sys./Loral, Inc.*, 324 F.3d 1308, 1318 (Fed. Cir. 2003). “Such a limitation must be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.” *Id.* When a claim element uses the word “means,” a rebuttable presumption arises that the limitation is a means-plus-function limitation and that § 112, ¶ 6 applies. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1348 (Fed. Cir.

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<sup>2</sup> Today, this code section is 35 U.S.C. § 112(f), but the ’877 Patent was issued before the latest amendments, so the previous version applies.

2015). Nevertheless, “the essential inquiry is not merely the presence or absence of the word ‘means’ but whether the words of the claim are understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure.” *Id.*

For the claim term “means for driving said rotor to rotate located in at least one bottom section,” which appears in Claim 4, the parties agree that §112, ¶ 6 governs. The table below illustrates the parties’ positions on the construction:

Grace’s proposed construction	Chandler’s proposed construction
<p><u>Function:</u> driving a rotor to rotate.</p> <p><u>Means:</u> motor or gearbox and equivalent structures.</p>	<p><u>Function:</u> driving said rotor to rotate, where the means for driving is located in at least one bottom section.</p> <p><u>Means:</u> (i) magnetic coupling (magnet mount, gear box or motor, driving magnet, coupling magnet), or (ii) direct drive at bottom of cell body, and known equivalents.</p>

From this, it is evident that the parties essentially agree that the function in this claim term is “driving said rotor to rotate.” They dispute, however, the means and which term the phrase “located in at least one bottom section” modifies. Grace contends that the phrase modifies “rotor,” but Chandler argues that the phrase modifies “means for driving.” Also of significance is the fact that Claim 14 is dependent upon Claim 4 and it claims:

The viscometer of claim 4 wherein said means for driving said rotor to rotate is a magnetic coupling across said pressure vessel wall.

‘877 Patent col. 13 ll. 22–24. Under the doctrine of “claim differentiation,” then, Claim 4 should not be construed as requiring the limitation added by Claim 14. *See Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1380 (Fed. Cir. 2006) (“‘[C]laim differentiation’ refers to the presumption that an independent claim should not be construed as requiring a limitation added by a dependent claim.”).

The Court disagrees with Grace’s proposed construction of the means as “motor or gearbox and equivalent structures.” The means described in Claim 4 includes, but does not require, a magnetic coupling. A “motor or gearbox” is not broad enough to include magnetic coupling. The Court instead adopts Chandler’s proposed construction, which includes “magnetic coupling” explicitly (as it must, due to dependent Claim 14), but also includes other terms that are described elsewhere in the ‘877 Patent as causing the rotor to rotate. *See* ‘877 Patent col. 5 ll. 45–47 (magnet mount); col. 4 ll. 55–59 (gear box, motor, driving magnet, or coupling magnet); col. 12 ll. 41–43 (direct drive at bottom of the cell body).

Moreover, the Court agrees with Chandler that the phrase “located in at least one bottom section” modifies “means for driving” rather than “rotor.” Not only does this interpretation conform with usual rules of grammar and sentence structure, it is also confirmed by reading the previous lines of the ‘877 Patent. Claim 4 describes a viscometer with a pressure vessel and “within said pressure vessel a rotor which is driven to rotate.” ‘877 Patent col. 12 ll. 55–56. The rotor of the viscometer in Claim 4 is located in the “pressure vessel,” not necessarily in the “bottom section.” The bottom section is the location of the “means for driving,” and not necessarily the location of the rotor. The Court therefore adopts in its entirety the claim construction proposed by Chandler for the term “means for driving said rotor to rotate located in at least one bottom section.”

**F. “Bearing means for rotationally suspending said bob” and “spring means restricting the rotation of said bob”**

The Court will construe the next two terms together. The parties dispute whether the means-plus-function analysis of § 112, ¶ 6 applies to these terms.<sup>3</sup> As previously explained, the use of the term “means” gives rise to a presumption that the analysis does apply, but this does not

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<sup>3</sup> The original briefing submitted by the parties indicated that the parties agreed that § 112, ¶ 6 applied to these terms, but at oral argument, Grace represented that its position was that it did not apply.

require that a court “blindly elevate[] form over substance when evaluating whether a claim limitation invokes § 112, para. 6.” *Williamson*, 792 F.3d at 1348. Here, the Court holds that the use of the term “means” within the two claims does not invoke the means-plus-function analysis of § 112, ¶ 6. Both of these terms use specific words before using “means” (i.e., “bearing means” and “spring means”) that sufficiently define what “means” each limitation claims.

In addition, the functions in these two terms are sufficiently clear. The function of the first term is “rotationally suspending said bob” and the function of the second term is “restricting the rotation of said bob.” These terms do not require construction as they recite sufficient structures for performing the described functions in their entirety. *See Trimed, Inc. v. Stryker Corp.*, 514 F.3d 1256, 1259 (Fed. Cir. 2008).

**G. “Means for directly or indirectly sensing the rotation of said bob”**

Next, the parties disagree again as to whether § 112, ¶ 6 applies to this claim language, which appears in Claim 11 of the ‘877 Patent. Claim 11 provides in full:

A viscometer according to claim 8 further comprising means for directly or indirectly sensing the rotation of said bob.<sup>4</sup>

‘877 Patent col. 13 ll. 13–15. The Court first holds that the use of the word “means” in this term does raise the usual presumption that § 112, ¶ 6 applies. *See Williamson*, 792 F.3d at 1348.

The table below illustrates the parties’ positions on construction:

Grace’s proposed construction	Chandler’s proposed construction
<u>Function</u> : directly or indirectly sensing.	<u>Function</u> : directly or indirectly sensing the rotation of said bob.
<u>Means</u> : sensor and equivalent structures.	<u>Means</u> : top magnet and magnetometer, concentrically mounted electrical stator and

<sup>4</sup> Claim 8 provides: “A viscometer according to claim 5 further comprising a spring means restricting the rotation of said bob.” ‘877 Patent col. 13 ll. 7–8. Claim 5 provides: “A viscometer according to claim 4 further comprising a bearing means for rotationally suspending said bob.” *Id.* col. 13 ll. 1–2. Claim 4 has previously been provided in full.

	rotor, encoder, potentiometer and brush, metal arm or wiper, and known equivalents.
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As is evident, the parties' only dispute as to the function is whether to include "the rotation of said bob" to limit what the means is "directly or indirectly sensing." Chandler argues that the thing being sensed (the rotation) is significant to defining the function, and therefore must be included in the claim construction. Grace has offered no argument as to why this would not be the case. Moreover, the Court agrees with Chandler that the construction of the function should include what the means is sensing. Chandler's construction for the function of this term is adopted.

The parties disagree significantly as to how the means should be defined. Grace argues that the means should be defined as a "sensor and equivalent structures" so that it is broad enough to encompass any possible embodiments and argues that Chandler's proposed construction impermissibly inserts dependent claims into independent Claim 11. Chandler argues that, because the word "sensor" does not appear anywhere in the specification, it cannot be a disclosed structure. The Court agrees, to an extent, with both parties. Chandler's proposed construction is derived from the claims and specifications of the '877 Patent: "magnet and magnetometer" comes from dependent Claim 12; "potentiometer and a brush" comes from dependent Claim 13; concentrically mounted and electrical stator and rotor" comes from the description of preferred embodiment viscometer 80 ('877 Patent col. 11 ll. 46–55), as does "encoder"; and "metal arm or wiper" comes from the subsequent sentence in the '877 Patent.

Nevertheless, the '877 Patent, when read in its entirety, makes evident that there are many different structures that could serve as the "means for sensing" described in Claim 11, and some may not be explicitly included in the patent itself. Accordingly, the Court adopts a hybrid of the parties' proposed constructions: sensor and equivalent structures, including a magnet and

magnetometer, concentrically mounted electrical stator and rotor, encoder, potentiometer and brush, metal arm or wiper, and known equivalents.

**H. “Means for driving said rotor to rotate is a magnetic coupling across said pressure wall”**

The parties dispute whether § 112, ¶ 6 should apply to this claim term. Chandler contends it should; Grace disagrees. The Court holds that the means-plus-function analysis does not apply to this term. Like other terms this Court has already analyzed, the use of the term “means” in this claim does not necessarily invoke § 112, ¶ 6. Instead, Claim 14 is a dependent claim on Claim 4, and adds a specific “means for driving” described in Claim 4. This definition is sufficient and there is no need to apply the means-plus-function analysis. Instead, this term is given its plain and ordinary meaning as Grace contends.

**IV. Conclusion**

The Court has considered the evidence in the record. The Court also has considered the parties’ oral arguments and explanations during the *Markman* hearing, which the Court found very helpful and informative. Based on this consideration of the evidence and the parties’ arguments, as well as the application of governing claim construction principles, the Court construes the terms and phrases as described in the foregoing, and as summarized in the table below:

Disputed Term	Court’s Construction
“Whereby said pressurization fluid would not mix with said test sample because of the nature of their density difference” (and related terms); “top section filled with a pressurization fluid of a first density and at least one lower section filled with a test sample of a second density”; “top section filled with a pressurization fluid of a first density”; and “while contacting with a sample liquid of a second density to be measured”	Plain and ordinary meaning (no construction necessary)

“Enlarged chamber”	Indefinite
“Fluid”	A gas or a liquid
“communicating pressure”	Plain and ordinary meaning (no construction necessary)
“Means for driving said rotor to rotate located in at least one bottom section”	<p><u>Function:</u> driving said rotor to rotate, where the means for driving is located in at least one bottom section.</p> <p><u>Means:</u> (i) magnetic coupling (magnet mount, gear box or motor, driving magnet, coupling magnet), or (ii) direct drive at bottom of cell body, and known equivalents.</p>
“Bearing means for rotationally suspending said bob” and “spring means restricting the rotation of said bob”	Plain and ordinary meaning (no construction necessary)
“Means for directly or indirectly sensing the rotation of said bob”	<p><u>Function:</u> directly or indirectly sensing the rotation of said bob.</p> <p><u>Means:</u> sensor and equivalent structures, including a magnet and magnetometer, concentrically mounted electrical stator and rotor, encoder, potentiometer and brush, metal arm or wiper, and known equivalents.</p>
“Means for driving said rotor to rotate is a magnetic coupling across said pressure wall”	Plain and ordinary meaning (no construction necessary)

It is **SO ORDERED**.

Signed at Houston, Texas, this 1<sup>st</sup> day of July, 2021.



Andrew S. Hanen  
United States District Judge